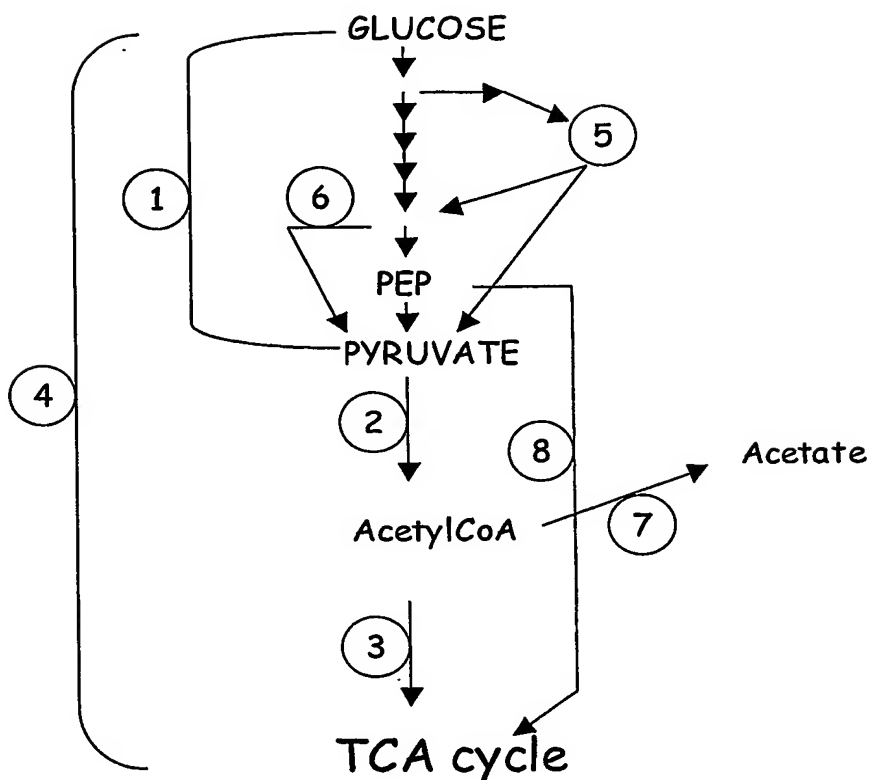


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FIGURE 1a



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Figure 1a.

Schematic representation of some interconnected metabolic routes involved in glucose assimilation. The numbers represents the reactions described more in detail in Table 1. Reactions 1-3 comprise the most efficient pathway for glucose assimilation. Reaction 4 is the sum of reactions 1-3. All the other reactions (5-8) are alternative routes that in general, are less efficient or skip the formation of some important metabolic intermediates.

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FIGURE 1b

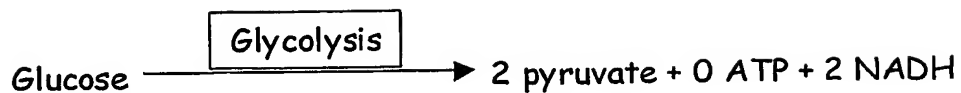
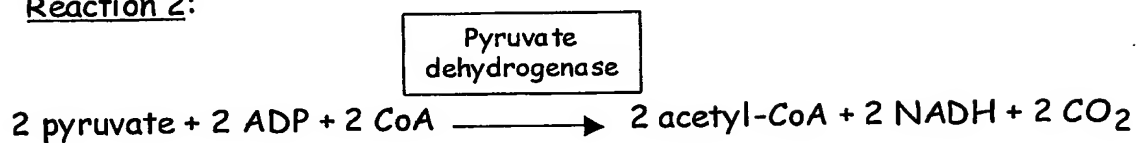
Reaction 1:Reaction 2:Reaction 3:Reaction 4:Reaction 5:

Figure 2.

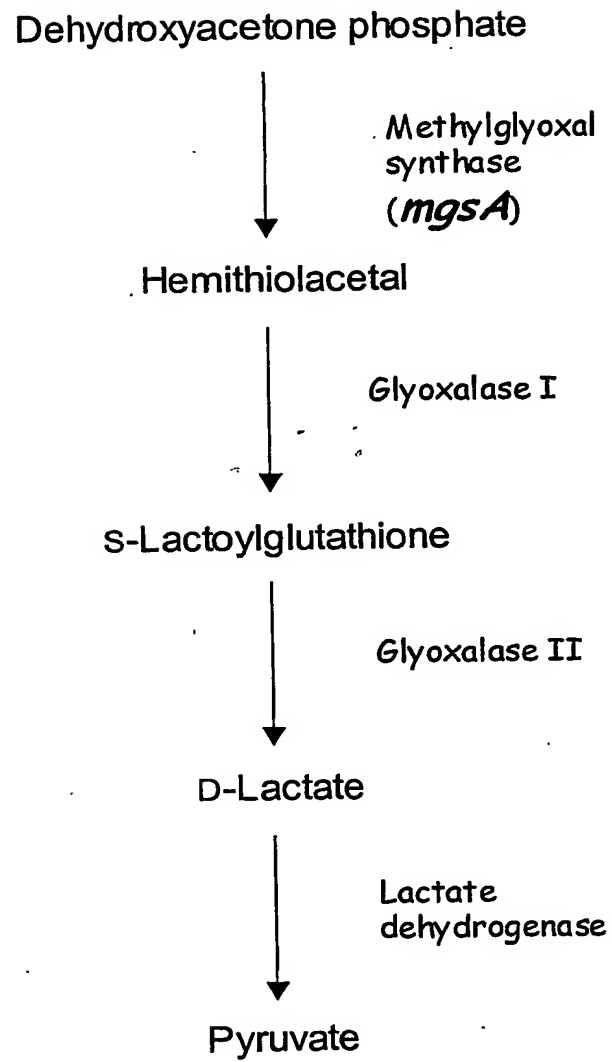


FIGURE 3A

(a) SEQ ID NO. 1

ArcA1

CACATTCTTATCGTTGAAGACGAGTTGGTAACACGCAACACGTGTAGGCTGGAGC
TGCTTC

(b) SEQ ID NO. 2

ArcA2

TTCCAGATCACCGCAGAAGCGATAACCTTCACCGTGAATGGTCATATGAATATCCT
CCTTAG

(c) SEQ ID NO. 3

ArcA3

AGTTGGTAACACGCAACACGCAAC

(d) SEQ ID NO. 4

ArcA4

CGCAGAAGCGATAACCTTCACCG

(e) SEQ ID NO. 5

Edd1

ATGAATCCACAATTGTTACGCGTAACAAATCGAATCATTGAACGTTTCGCGCGAGA
CTCGCTCTGCTTATCTCGCCCGGATTTATCGATAAGCTGGATCC

(f) SEQ ID NO. 6

Edd2

TTAAAAAGTGATACAGGTTGCGCCCTGTTTCGGCACCGGACAGTTTTTTCACGCAAG
GCGCTGAATAATTCACGTCCTGTCGGATGCATATGGCGGCCGC

(g) SEQ ID NO. 7

Edd3

TAACATGATCTTGCGCAGATTG

(h) SEQ ID NO. 8

Edd4

ACTGCACACTCGGTACGCAGA

(i) SEQ ID NO. 9

DackA-F

ATGTCGAGTAAGTTAGTACTGGTTCTGAACTGCGGTAGTTCTTCACTGAAATTTGC
CATCATCGATGCAGTAAATGGTGATGTGTAGGCTGGAGCTGCTT

FIGURE 3B

(j) SEQ ID NO. 10

Dpta-R

TTACTGCTGCTGTGCAGACTGAATCGCAGTCAGCGCGATGGTGTAGACGATATCG
TCAACCAGTGCGCCACGGGACAGGTCATATGAATATCCTCCTTAG

(k) SEQ ID NO. 11

Ack-U

ATTCAATTGAGTCGTCAAATT

(l) SEQ ID NO. 12

Ack-D

ATTGCGGACATAGCGCAAAT

(m) SEG ID NO. 13

MgsA-1

GTACATTATGGAAGTACGACTCGCACTTTACCTGCGCGGTGTAGGCTGGAGCTG
CTTCG

(n) SEQ ID NO. 14

MgsA-2

CTTCAGACGGTCCGCGAGATAACGCTGATAATCGGGGATCCATATGAATATCCTC
CTTAG

(o) SEQ ID NO. 15

MgsA-3

CTTGAATTGTTGGATGGCGATG

(p) SEQ ID NO. 16

MgsA-4

CGTCACGTTATTGGATGAGAG

(q) SEQ ID NO. 17

PpcR

TCGCATTGGCGCGAATATGCTCGGGCTTTGCTTTTCGTCAGTGGTTGAATTATTG
CTCAGGATGTGGCATTGTCAAGGGCATATGAATATCCTCCTTAG

(r) SEQ ID NO. 18

PpcF

CGATTTTTTAACATTTCCATAAGTTACGCTTATTTAAAGCGTCGTGAATTTAATGA
CGTAAATTCCTGCTATTTATTCGTGTGTAGGCTGGAGCTGCTTC

FIGURE 3C

(s) SEQ ID NO. 19

1.6GI promoter

CGAGCCGTCACGCCCTTGACAATGCCACATCCTGAGCAAATAAT

(t) SEQ ID NO. 20

Short 1.6 GI promoter

GCCCTTGACAATGCCACATCCTGAGCAAATAATTCAACCACT

(u) SEQ ID NO. 22

Short 1.5 GI promoter

GCCCTTGACTATGCCACATCCTGAGCAAATAATTCAACCACT

(v) SEQ ID NO. 23

GapA-R1

AGTCATATATTCCACCAGCTATTTGTTAGTGAATAAAAAGTGGTTGAATTATTTGCT
CAGGATGTGGCATAGTCAAGGGCATATGAATATCCTCCTTAG

(w) SEQ ID NO. 24

GapA-R2

GCTCACATTACGTGACTGATTCTAACAAAACATTAACACCAACTGGCAAAATTTTG
TCCGTGTAGGCTGGAGCTGCTTCG

(x) SEQ ID NO. 25

GapA-R3

GTCGACAAACGCTGGTATACCTCA

(y) SEQ ID NO. 26

GapA-R5

AGTCATATATTCCACCAGCTATTTGTTAGTGAATAAAAAGTGGTTGAATTATTTGCT
CAGGATGTGGCATTGTCAAGGGCATATGAATATCCTCCTTAG

Figure 4a

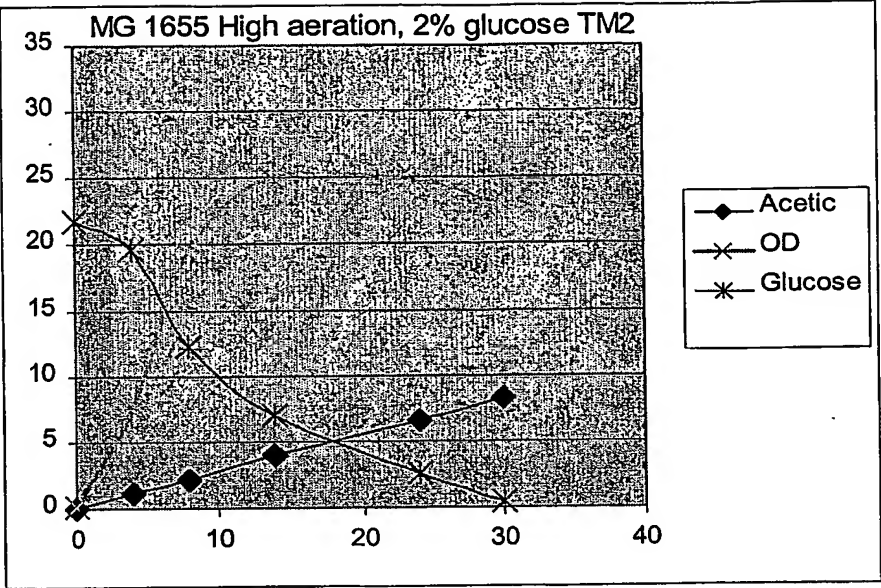


Figure 4b.

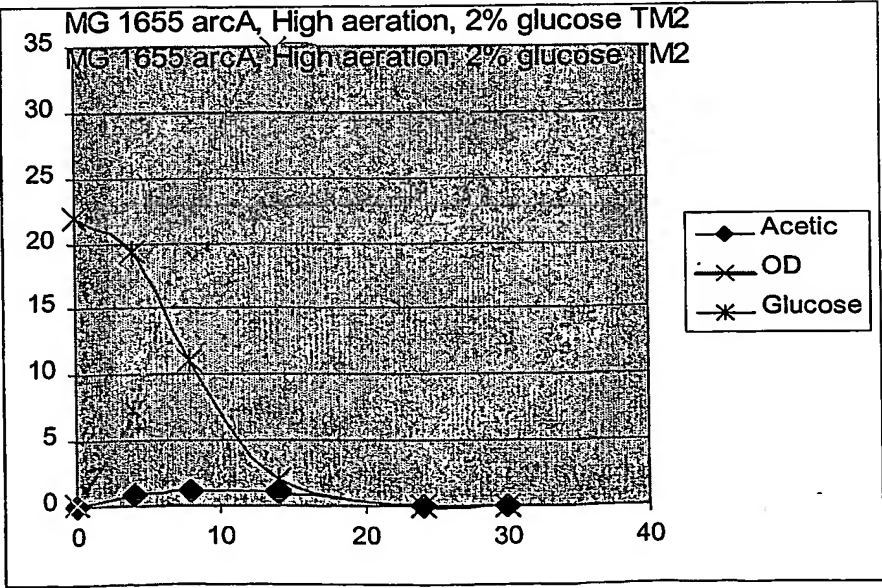


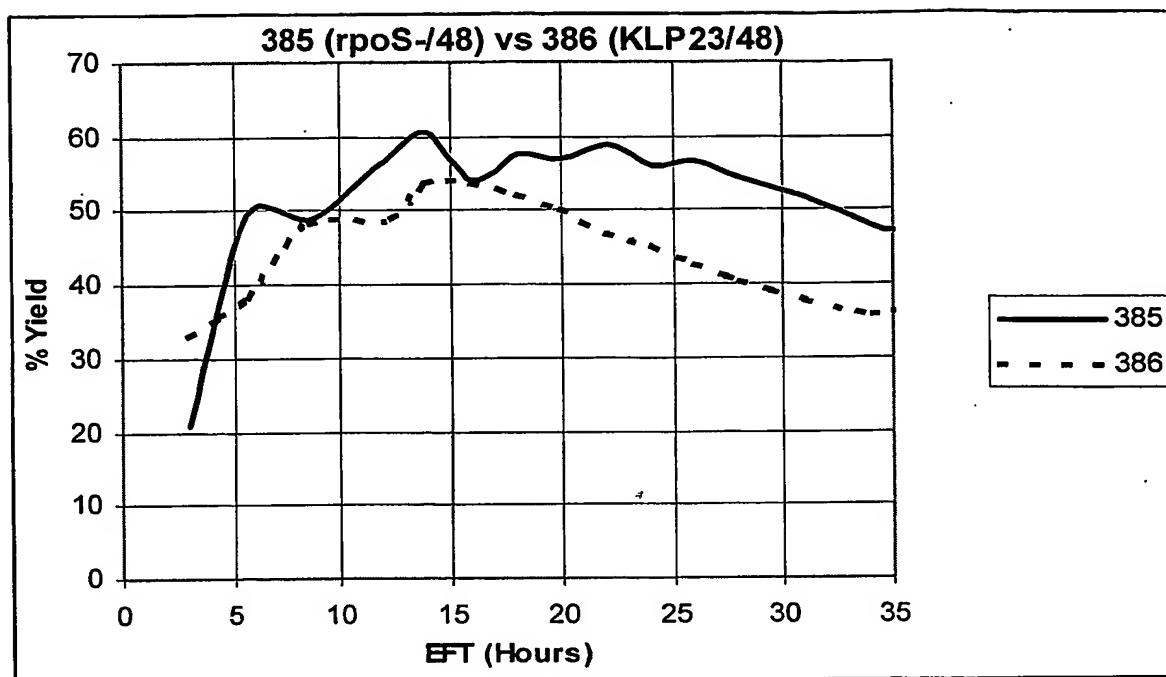
Figure 5

FIG. 6A.

TAGTAAAGCCCTCGCTAGATTTTAATGCGGATGTTGCGATTACTTCGCCAACTAT
TGCGATAACAAGAAAAAGCCAGCCTTTCATGATATATCTCCCAATTTGTGTAGGG
CTTATTATGCACGCTTAAAAATAATAAAAGCAGACTTGACCTGATAGTTTGGCTG
TGAGCAATTATGTGCTTAGTGATCTAACGCTTGAGTTAAGCCGCGCCGCGAAG
CGGCGTCGGCTTGAACGAATTGTTAGACATTATTTGCCGACTACCTTGGTGATC
TCGCCCTTTCACGTAGTGACAAATTCTTCCAAGTATGATCTGCGCGCGAGGCCAAG
CGATCTTCTTCTTGTCCAAGATAAGCCTGTCTAGCTTCAAGTATGACGGGCTGAT
ACTGGGCCCGCAGGCGCTCCATTGCCAGTCGGCAGCGACATCCTTCGGCGC
GATTTTGCCGGTACTGCGCTGTACCAAATGCGGGACAACGTAAGCACTACATT
TCGCTCATCGCCAGCCAGTCGGGCGGCGAGTTCCATAGCGTTAAGGTTTCAT
TTAGCGCCTCAAATAGATCCTGTTGAGGAACCGGATCAAAGAGTTCCTCCGCCG
CTGGACCTACCAAGGCAACGCTATGTTCTCTTGCTTTTGTGAGCAAGATAGCCA
GATCAATGTCGATCGTGGCTGGCTCGAAGATACCTGCAAGAATGTCATTGCGCT
GCCATTCTCAAATTGCAGTTCGCGCTTAGCTGGATAACGCCACGGAATGATGT
CGTCGTGCACAACAATGGTGACTTCTACAGCGCGGAGAATCTCGCTCTCTCCAG
GGGAAGCCGAAGTTTCCAAAAGGTCGTTGATCAAAGCTCGCCGCGTTGTTTCAT
CAAGCCTTACGGTCACCGTAACCAGCAAATCAATATCACTGTGTGGCTTCAGGC
CGCCATCCACTGCGGAGCCGTACAAATGTACGGCCAGCAACGTCGGTTCGAGA
TGCGGCTCGATGACGCCAACTACCTCTGATAGTTGAGTCGATACTTCGGCGATC
ACCGCTTCCCTCATGATGTTTAACTTTGTTTTAGGGCGACTGCCCTGCTGCGTA
ACATCGTTGCTGCTCCATAACATCAAACATCGACCCACGGCGTAACGCGCTTGC
TGCTTGGATGCCCCGAGGCATAGACTGTACCCCAAAAAACAGTCATAACAAGCC
ATGAAAACCGCCACTGCGCCGTTACCACCGCTGCGTTCGGTCAAGGTTCTGGA
CCAGTTGCGTGAGCGCATACGCTACTTGCAATTACAGCTTACGAACCGAACAGGC
TTATGTCCACTGGGTTTCGTGCCTTCATCCGTTTCCACGGTGTGCGTCACCCGGC
AACCTTGGGCAGCAGCGAAGTCGAGGCATTTCTGTCCTGGCTGGCGAACGAGC
GCAAGGTTTCGGTCTCCACGCATCGTCAGGCATTGGCGGCCTTGCTGTTCTTCT
ACGGCAAGGTGCTGTGCACGGATCTGCCCTGGCTTCAGGAGATCGGAAGACCT
CGGCCGTGCGGGCGCTTGCCGGTGGTGCTGACCCCGGATGAAGTGGTTCGCA
TCCTCGGTTTTCTGGAAGGCGAGCATCGTTTGTTGCCCCAGCTTCTGTATGGAA
CGGGCATGCGGATCAGTGAGGGTTTGCAACTGCGGGTCAAGGATCTGGATTTC
GATCACGGCACGATCATCGTGCGGGAGGGCAAGGGCTCCAAGGATCGGGCCT
TGATGTTACCCGAGAGCTTGGCACCCAGCCTGCGCGAGCAGGGGAATTAATTC

FIG. 6B

CCACGGGTTTTGCTGCCCGCAAACGGGCTGTTCTGGTGTTGCTAGTTTGTTATC
AGAATCGCAGATCCGGCTTCAGCCGGTTTGCCGGCTGAAAGCGCTATTTCTTCC
AGAATTGCCATGATTTTTTCCCCACGGGAGGCGTCACTGGCTCCCGTGTTGTGC
GCAGCTTTGATTCGATAAGCAGCATCGCCTGTTTCAGGCTGTCTATGTGTGACT
GTTGAGCTGTAACAAGTTGTCTCAGGTGTTCAATTTTCATGTTCTAGTTGCTTTGT
TTTACTGGTTTCACCTGTTCTATTAGGTGTTACATGCTGTTTCATCTGTTACATTGT
CGATCTGTTTCATGGTGAACAGCTTTGAATGCACCAAAACTCGTAAAAGCTCTG
ATGTATCTATCTTTTTTACACCGTTTTTCATCTGTGCATATGGACAGTTTTCCCTTT
GATATGTAACGGTGAACAGTTGTTCTACTTTTGTTTGTTAGTCTTGATGCTTCACT
GATAGATACAAGAGCCATAAGAACCTCAGATCCTTCCGTATTTAGCCAGTATGTT
CTCTAGTGTGGTTCGTTGTTTTTGCGTGAGCCATGAGAACGAACCATTGAGATC
ATACTTACTTTGCATGTCACTCAAAAATTTTGCCTCAAAACTGGTGAGCTGAATTT
TTGCAGTTAAAGCATCGTGTAGTGTTTTTCTTAGTCCGTTATGTAGGTAGGAATC
TGATGTAATGGTTGTTGGTATTTTGTCAACCATTCATTTTTATCTGGTTGTTCTCAA
GTTCCGTTACGAGATCCATTTGTCTATCTAGTTCAACTTGGAATCAACGTATC
AGTCGGGCGGCCTCGCTTATCAACCACCAATTTTCATATTGCTGTAAGTGTTTAAA
TCTTTACTTATTGGTTTCAAACCCATTGGTTAAGCCTTTTAAACTCATGGTAGTT
ATTTTCAAGCATTAACATGAACTTAAATTCATCAAGGCTAATCTCTATATTTGCCT
TGTGAGTTTTCTTTGTGTTAGTTCTTTTAATAACCACTCATAAATCCTCATAGAG
TATTTGTTTTCAAAGACTTAACATGTTCCAGATTATATTTTATGAATTTTTTTAAC
TGAAAAGATAAGGCAATATCTCTTCACTAAAACTAATTCTAATTTTTTCGCTTGA
GAACTTGGCATAGTTTGTCCACTGGAAAATCTCAAAGCCTTTAACCAGGATTG
CTGATTTCCACAGTTCTCGTCATCAGCTCTCTGGTTGCTTTAGCTAATACACCAT
AAGCATTTTCCCTACTGATGTTTCATCATCTGAGCGTATTGGTTATAAGTGAACGA
TACCGTCCGTTCTTTCTTGTAGGGTTTTCAATCGTGGGGTTGAGTAGTGCCAC
ACAGCATAAAATTAGCTTGGTTTCATGCTCCGTTAAGTCATAGCGACTAATCGCT
AGTTCAATTTGCTTTGAAAACAATAATTGAGACATACATCTCAATTGGTCTAGGT
GATTTTAATCACTATACCAATTGAGATGGGCTAGTCAATGATAATTACTAGTCCTT
TTCCTTTGAGTTGTGGGTATCTGTAAATTCTGCTAGACCTTTGCTGGAAAACCTG
TAAATTCTGCTAGACCCTCTGTAAATTCGCTAGACCTTTGTGTGTTTTTTTTGT
TATATTCAAGTGGTTATAATTTATAGAATAAAGAAAGAATAAAAAAGATAAAAG
AATAGATCCCAGCCCTGTGTATAACTCACTACTTTAGTCAGTTCCGCAGTATTAC
AAAAGGATGTCGCAAACGCTGTTTGCTCCTCTACAAAACAGACCTTAAACCCCTA

FIG. 6C

AAGGCTTAAGTAGCACCCCTCGCAAGCTCGGGCAAATCGCTGAATATTCCTTTTG
TCTCCGACCATCAGGCACCTGAGTCGCTGTCTTTTTCGTGACATTCAGTTCGCT
GCGCTCACGGCTCTGGCAGTGAATGGGGGTAAATGGCACTACAGGCGCCTTTT
ATGGATTTCATGCAAGGAAACTACCCATAATACAAGAAAAGCCCGTCACGGGCTT
CTCAGGGCGTTTTATGGCGGGTCTGCTATGTGGTGCTATCTGACTTTTTGCTGT
TCAGCAGTTCCTGCCCTCTGATTTTCCAGTCTGACCACTTCGGATTATCCCGTG
ACAGGTCATTTCAGACTGGCTAATGCACCCAGTAAGGCAGCGGTATCATCAACAG
GCTTACCCGTCTTACTGTGCGGAATTCATTTAAATAGTCAAAAGCCTCCGACCG
GAGGCTTTTGACTGCTAGGCGATCTGTGCTGTTTGCCACGGTATGCAGCACCA
GCGCGAGATTATGGGCTCGCACGCTCGACTGTGCGACGGGGGCACTGGAACG
AGAAGTCAGGCGAGCCGTACGCCCTTGACAATGCCACATCCTGAGCAAATAAT
TCAACCACTAAACAAATCAACCGCGTTTCCCGGAGGTAACCAAGCTTGCGGGAG
AGAATGATGAACAAGAGCCAACAAGTTCAGACAATCACCTGGCCGCCGCCCA
GCAATGGCGGCGGCGGTGGAAGGCAAGCCACTGAGATCAACGTGGCGGTG
GTGTTTTCCGTAGTTGACCGCGGAGGCAACACGCTGCTTATCCAGCGGATGGA
CGAGGCCTTCGTCTCCAGCTGCGATATTTCCCTGAATAAAGCCTGGAGCGCCT
GCAGCCTGAAGCAAGGTACCCATGAAATTACGTGAGCGGTCCAGCCAGGACAA
TCTCTGTACGGTCTGCAGCTAACCAACCAACAGCGAATTATTATTTTTGGCGGC
GGCCTGCCAGTTATTTTAATGAGCAGGTAATTGGCGCCGTGCGCGTTAGCGG
CGGTACGGTCGAGCAGGATCAATTATTAGCCCAGTGCGCCCTGGATTGTTTTTC
CGCATTATAACCTGAAGCGAGAAGGTATATTATGAGCTATCGTATGTTCCGCCA
GGCATTCTGAGTGTTAACGAGGGGACCGTCATGTCGCTTTCACCGCCAGGCGT
ACGCCTGTTTTACGATCCGCGCGGGCACCATGCCGCGGCCATCAATGAGCTGT
GCTGGGGGCTGGAGGAGCAGGGGGTCCCCTGCCAGACCATAACCTATGACGG
AGGCGGTGACGCCGCTGCGCTGGGCGCCCTGGCGGCCAGAAGCTCGCCCCT
GCGGGTGGGTATCGGGCTCAGCGCGTCCGGCGAGATAGCCCTCACTCATGCC
CAGCTGCCGGCGGACGCGCCGCTGGCTACCGGACACGTACCGATAGCGACG
ATCAACTGCGTACGCTCGGCGCCAACGCCGGGCAGCTGGTTAAAGTCCTGCCG
TTAAGTGAGAGAACTGAATGTATCGTATCTATACCCGCACCGGGGATAAAGGC
ACCACCGCCCTGTACGGCGGCAGCCGCATCGAGAAAGACCATATTCGCGTCGA
GGCCTACGGCACCGTCGATGAACTGATATCCAGCTGGGCGTCTGCTACGCCA
CGACCCGCGACGCCGGGCTGCGGGAAAGCCTGCACCATATTCAGCAGACGCT
GTTCTGTGCTGGGGGCTGAACTGGCCAGCGATGCGCGGGGCCTGACCCGCTG

FIG. 6D

AGCCAGACGATCGGCGAAGAGGAGATCACCGCCCTGGAGCGGCTTATCGACC
GCAATATGGCCGAGAGCGGCCCCGTTAAAACAGTTCGTGATCCCGGGGAGGAAT
CTCGCCTCTGCCCAGCTGCACGTGGCGCGCACCCAGTCCCGTCGGCTCGAAC
GCCTGCTGACGGCCATGGACCGCGCGCATCCGCTGCGCGACGCGCTCAAACG
CTACAGCAATCGCCTGTCTGGATGCCCTGTTCTCCATGGCGCGAATCGAAGAGA
CTAGGCCTGATGCTTGCGCTTGAACCTGGCCTAGCAAACACAGAAAAAAGCCCG
CACCTGACAGTGCGGGCTTTTTTTTTCTAGGCGATCTGTGCTGTTTGCCACGG
TATGCAGCACCCAGCGCGAGATTATGGGCTCGCACGCTCGACTGTCTGGACGGG
GGCACTGGAACGAGAAGTCAGGCGAGCCGTCACGCCCTTGACAATGCCACATC
CTGAGCAAATAATTCAACCACTAAACAAATCAACCGCGTTTCCCGGAGGTAACC
AAGCTTCACCTTTTGAGCCGATGAACAATGAAAAGATCAAACGATTTGCAGTAC
TGGCCCAGCGCCCCGTCAATCAGGACGGGCTGATTGGCGAGTGGCCTGAAGA
GGGGCTGATCGCCATGGACAGCCCCCTTGACCCGGTCTCTTCAGTAAAAGTGG
ACAACGGTCTGATCGTCGAACTGGACGGCAAACGCCGGGACCAAGTTTGACATG
ATCGACCGATTTATCGCCGATTACGCGATCAACGTTGAGCGCACAGAGCAGGC
AATGCGCCTGGAGGCGGTGGAAATAGCCCGTATGCTGGTGGATATTCACGTCA
GCCGGGAGGAGATCATTGCCATCACTACCGCCATCACGCCGGGCCAAAGCGGTC
GAGGTGATGGCGCAGATGAACGTGGTGGAGATGATGATGGCGCTGCAGAAGAT
GCGTGCCCGCCGGACCCCCCTCCAACCAAGTGCCACGTACCAATCTCAAAGATA
ATCCGGTGCAGATTGCCGCTGACGCCGCCGAGGCCGGGATCCGCGGCTTCTC
AGAACAGGAGACCACGGTCGGTATCGCGCGCTACGCGCCGTTTAACGCCCTGG
CGCTGTTGGTCGGTTCGCAGTGCGGCCGCCCGGCGTGTTGACGCAGTGCTC
GGTGGAAGAGGCCACCGAGCTGGAGCTGGGCATGCGTGGCTTAACCAGCTAC
GCCGAGACGGTGTCTGGTCTACGGCACCGAAGCGGTATTTACCGACGGCGATGA
TACGCCGTGGTCAAAGGCGTTCCTCGCCTCGGCCTACGCCTCCCGCGGGTTGA
AAATGCGCTACACCTCCGGCACCGGATCCGAAGCGCTGATGGGCTATTCCGGAG
AGCAAGTCGATGCTCTACCTCGAATCGCGCTGCATCTTCATTACTAAAGGCGCC
GGGGTTCAGGGACTGCAAACGGCGCGGTGAGCTGTATCGGCATGACCGGCG
CTGTGCCGTCTGGGCATTCTGGGCGGTGCTGGCGGAAAACCTGATCGCCTCTATG
CTCGACCTCGAAGTGGCGTCCGCCAACGACCAGACTTTCTCCCACTCGGATATT
CGCCGCACCGCGCGCACCCCTGATGCAGATGCTGCCGGGCACCGACTTTATTTT
CTCCGGCTACAGCGCGGTGCCGAACACGACAACATGTTCCCGGGCTCGAACT
TCGATGCGGAAGATTTTGATGATTACAACATCCTGCAGCGTGACCTGATGGTTG

FIG. 6E

ACGGCGGCCTGCGTCCGGTGACCGAGGCGGAAACCATTGCCATTCGCCAGAA
AGCGGCGCGGGCGATCCAGGCGGTTTTCCGCGAGCTGGGGCTGCCGCCAATC
GCCGACGAGGAGGTGGAGGCCGCCACCTACGCGCACGGCAGCAACGAGATGC
CGCCGCGTAACGTGGTGGAGGATCTGAGTGCGGTGGAAGAGATGATGAAGCG
CAACATCACCGGCCTCGATATTGTCGGCGCGCTGAGCCGCAGCGGCTTTGAGG
ATATCGCCAGCAATATTCTCAATATGCTGCGCCAGCGGGTCACCGGCGATTACC
TGCAGACCTCGGCCATTCTCGATCGGCAGTTCGAGGTGGTGAGTGCGGTCAAC
GACATCAATGACTATCAGGGGCCGGGCACCGGCTATCGCATCTCTGCCGAACG
CTGGGCGGAGATCAAAAATATTCCGGGCGTGTTTCAGCCCGACACCATTGAAT
AAGGCGGTATTCCTGTGCAACAGACAACCCAAATTCAGCCCTCTTTTACCCTGA
AAACCCGCGAGGGCGGGGTAGCTTCTGCCGATGAACGCGCCGATGAAGTGGT
GATCGGCGTCGGCCCTGCCTTCGATAAACACCAGCATCACACTCTGATCGATAT
GCCCCATGGCGCGATCCTCAAAGAGCTGATTGCCGGGGTGGAAGAAGAGGGG
CTTCACGCCCCGGGTGGTGCGCATTCTGCGCACGTCCGACGTCTCCTTTATGGC
CTGGGATGCGGCCAACCTGAGCGGCTCGGGGATCGGCATCGGTATCCAGTCG
AAGGGGACCACGGTCATCCATCAGCGCGATCTGCTGCCGCTCAGCAACCTGGA
GCTGTTCTCCCAGGCGCCGCTGCTGACGCTGGAGACCTACCGGCAGATTGGCA
AAAACGCTGCGCGCTATGCGCGCAAAGAGTCACCTTCGCCGGTGCCGGTGGTG
AACGATCAGATGGTGCGGCCGAAATTTATGGCCAAAGCCGCGCTATTTATATC
AAAGAGACCAAACATGTGGTGCAGGACGCCGAGCCCGTCACCCTGCACATCGA
CTTAGTAAGGGAGTGACCATGAGCGAGAAAACCATGCGCGTGCAAGGATTATCC
GTTAGCCACCCGCTGCCCGGAGCATATCCTGACGCCTACCGGCAAACCATTA
CCGATATTACCCTCGAGAAGGTGCTCTCTGGCGAGGTGGGCCCCGCAGGATGTG
CGGATCTCCCGCCAGACCCTTGAGTACCAGGCGCAGATTGCCGAGCAGATGCA
GCGCCATGCGGTGGCGCGCAATTTCCGCCGCGCGGCGGAGCTTATCGCCATT
CCTGACGAGCGCATTCTGGCTATCTATAACGCGCTGCGCCCGTTCCGCTCCTC
GCAGGCGGAGCTGCTGGCGATCGCCGACGAGCTGGAGCACACCTGGCATGCG
ACAGTGAATGCCGCCTTTGTCCGGGAGTCGGCGGAAGTGTATCAGCAGCGGCA
TAAGCTGCGTAAAGGAAGCTAAGCGGAGGTCAGCATGCCGTTAATAGCCGGGA
TTGATATCGGCAACGCCACCACCGAGGTGGCGCTGGCGTCCGACTACCCGCAG
GCGAGGGCGTTTGTGTCAGCGGGATCGTCGCGACGACGGGCATGAAAGGGA
CGCGGGACAATATCGCCGGGACCCTCGCCGCGCTGGAGCAGGCCCTGGCGAA
AACACCGTGGTCGATGAGCGATGTCTCTCGCATCTATCTTAACGAAGCCGCGCC

FIG. 6F

GGTGATTGGCGATGTGGCGATGGAGACCATCACCGAGACCATTATCACCGAAT
CGACCATGATCGGTCATAACCCGCAGACGCCGGGCGGGGTGGGCGTTGGCGT
GGGGACGACTATCGCCCTCGGGCGGCTGGCGACGCTGCCGGCGGGCGCAGTAT
GCCGAGGGGTGGATCGTACTGATTGACGACGCCGTCGATTTCTTGACGCCGT
GTGGTGGCTCAATGAGGCGCTCGACCGGGGGATCAACGTGGTGGCGGCGATC
CTCAAAAAGGACGACGGCGTGCTGGTGAACAACCGCCTGCGTAAAACCCTGCC
GGTGGTGGATGAAGTGACGCTGCTGGAGCAGGTCCCCGAGGGGGTAATGGCG
GCGGTGGAAGTGGCCGCGCCGGGCCAGGTGGTGCGGATCCTGTCGAATCCCT
ACGGGATCGCCACCTTCTTCGGGCTAAGCCCGGAAGAGACCCAGGCCATCGTC
CCCATCGCCCGCGCCCTGATTGGCAACCGTTCCGCGGTGGTGCTCAAGACCCC
GCAGGGGGATGTGCAGTCGCGGGTGATCCCGCGGGGCAACCTCTACATTAGC
GGCGAAAAGCGCCGCGGAGAGGCCGATGTCGCCGAGGGCGCGGAAGCCATC
ATGCAGGCGATGAGCGCCTGCGCTCCGGTACGCGACATCCGCGGGCGAACCGG
GCACCCACGCCGGCGGCATGCTTGAGCGGGTGCGCAAGGTAATGGCGTCCCT
GACCGGCCATGAGATGAGCGCGATATACATCCAGGATCTGCTGGCGGTGGATA
CGTTTATTCCGCGCAAGGTGCAGGGCGGGATGGCCGGCGAGTGCGCCATGGA
GAATGCCGTCGGGATGGCGGCGATGGTGAAAGCGGATCGTCTGCAAATGCAG
GTTATCGCCCGCGAACTGAGCGCCCGACTGCAGACCGAGGTGGTGGTGGGCG
GCGTGAGAGCCAACATGGCCATCGCCGGGGCGTTAACCACTCCCGGCTGTGC
GGCGCCGCTGGCGATCCTCGACCTCGGCGCCGGCTCGACGGATGCGGCGATC
GTCAACGCGGAGGGGCGAGATAACGGCGGTCCATCTCGCCGGGGCGGGGAATA
TGGTCAGCCTGTTGATTAACCGAGCTGGGCCTCGAGGATCTTTGCTGGCG
GAAGCGATAAAAAAATACCCGCTGGCCAAAGTGGAAGCCTGTTCAGTATTCGT
CACGAGAATGGCGCGGTGGAGTTCTTTCCGGGAAGCCCTCAGCCCGGCGGTGTT
CGCCAAAGTGGTGTACATCAAGGAGGGCGAACTGGTGCCGATCGATAACGCCA
GCCCCTGGAAAAAATTCGTCTCGTGCGCCGGCAGGCGAAAGAGAAAGTGTTT
GTCACCAACTGCCTGCGCGCGCTGCGCCAGGTCTACCCGGCGGTTCCATTGCG
CGATATCGCCTTTGTGGTGCTGGTGGGCGGCTCATCGCTGGACTTTGAGATCC
CGCAGCTTATCACGGAAGCCTTGTCGCACTATGGCGTGGTCGCCGGGCGAGGG
CAATATTCGGGGAACAGAAGGGCCGCGCAATGCGGTGCCACCGGGGCTGCTA
CTGGCCGGTCAGGCGAATTAAACGGGCGCTCGCGCCAGCCTCTAGGTACAAAT
AAAAAAGGCACGTCAGATGACGTGCCTTTTTTCTTGTCTAGAGTACTGGCGAAA
GGGGGATGTGCTGCAAGGCGATTAAGTTGGGTAAACGCCAGGGTTTTCCAGTC

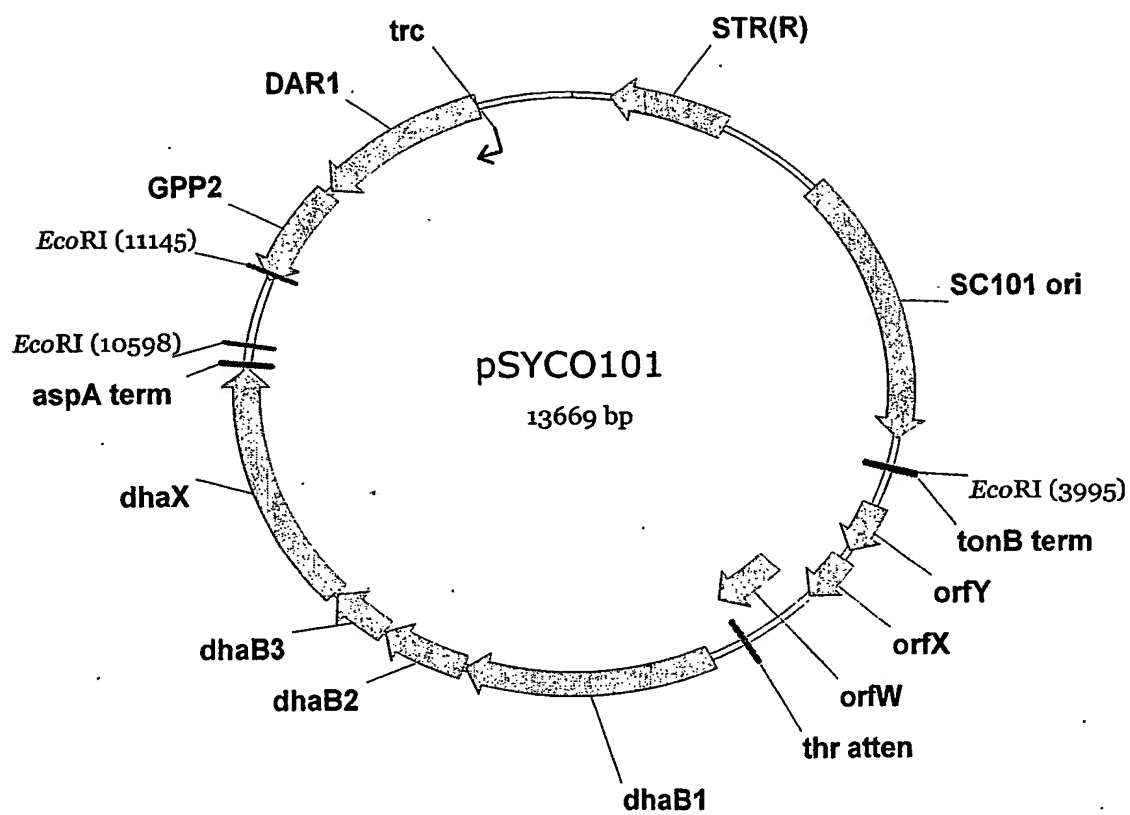
FIG. 6G

ACGACGTTGTAAAACGACGGCCAGTGAATTCGAGCTCGGTACCCGGGGCGGCC
GCGCTAGCGCCCGATCCAGCTGGAGTTTGTAGAAACGAAAAAGGCCATCCGT
CAGGATGGCCTTCTGCTTAATTTGATGCCTGGCAGTTTATGGCGGGCGTCCTGC
CCGCCACCCTCCGGGGCGTTGCTTCGCAACGTTCAAATCCGCTCCCGGCGGAT
TTGTCCTACTCAGGAGAGCGTTCACCGACAAACAACAGATAAAACGAAAGGCCC
AGTCTTTTCTGACTGAGCCTTTTCGTTTTATTTGATGCCTGGCAGTTCCCTACTCTCG
CATGGGGAGACCCCACTACCATCGGCGCTACGGCGTTTCACTTCTGAGTTC
GGCATGGGGTCAGGTGGGACCACCGCGCTACTGCCGCCAGGCAAATTCTGTTT
TATCAGACCGCTTCTGCGTTCTGATTTAATCTGTATCAGGCTGAAAATCTTCTCT
CATCCGCCAAAACAGCCAGCTTGCATGCCTGCAGCCCGGGTTACCATTTCAAC
AGATCGTCCTTAGCATATAAGTAGTCGTCAAAAATGAATTCAACTTCGTCTGTTT
CGGCATTGTAGCCGCCAACTCTGATGGATTCTGTGTTTTTGACAATGATGTCAC
AGCCTTTTTCTTTAGGAAGTCCAAGTCGAAAGTAGTGGCAATACCAATGATCTT
ACAACCGGCGGCTTTTCCGGCGGCCAATACCTGCTGGAGCGTCTTCAAATACTAC
TACCTTAGATTTGGAAGGGTCTTGCTCATTGATCGGATATCCTAAGCCATTCCTG
CCCTTCAGATATGGTTCTGGATGAGGCTTACCCTGTTTGACATCATTAGCGGTA
ATGAAGTACTTTGGTCTCCTGATTCCCAGATGCTCGAACCATTTTTGTGCCATAT
CACGGGTACCGGAAGTTGCCACAGCCCATTTCTCTTTTGGTAGAGCGTTCAAAG
CGTTGCACAGCTTAACTGCACCTGGGACTTCAATGGATTTTTACCGTACTTGA
CCGGAATTTAGCTTCTAATTTGTAAACATACTCTTCATTGGCAAAGTCTGGAGC
GAACTTAGCAATGGCATCAAACGTTCTCCAACCATGCGGAGACTTGGATAACGTG
TTCAGCATCGAAATAAGGTTTGTCTTACCGAAATCCCTCCAGAATGCAGCAAT
GGCTGGTTGAGAGATGATAATGGTACCGTCGACGTCGAACAAAGCGGCGTTAA
CTTTCAAAGATAGAGGTTTAGTAGTCAATCCCATAATTCTAGTCTGTTTCCTGGA
TCCAATAAATCTAATCTTCATGTAGATCTAATTCTTCAATCATGTCCGGCAGGTTT
TTCATTGGGTAGTTGTTGTAAACGATTTGGTATACGGCTTCAAATAATGGGAAGT
CTTCGACAGAGCCACATGTTTCCAACCATTCGTGAACTTCTTTCAGGTAATTAA
ACCTTGAGCGGATTGGCCATTCAACAACCTCTTTTACATTCCCAGGCGTCCTT
ACCAGAAGTAGCCATTAGCCTAGCAACCTTGACGTTTCTACCACCAGCGCAGGT
GGTGATCAAATCAGCAACACCAGCAGACTCTTGGTAGTATGTTTCTTCTCTAGAT
TCTGGGAAAAACATTTGACCGAATCTGATGATCTCACCCAAACCGACTCTTTGG
ATGGCAGCAGAAAGCGTTGTTACCCCAGCCTAGACCTTCGACGAAACCACAACCT
AAGGCAACAACGTTCTTCAAAGCACACAGATGGAGATACCAGCAACATCTTCG

FIG. 6H

ATGACACTAACGTGGAAGTAAGGTCTGTGGAACAAGGCCTTTAGAACCTTATGG
TCGACGTCCTTGCCCTCGCCTCTGAAATCCTTTGGAATGTGGTAAGCAACTGTT
GTTTCAGACCAAGTGTTCCTTGAGCGACTTCGGTGGAATGTTAGCACCAGATAGA
GCACCACATTGAATACCTAGTTCCTCAGTGATGTAAGAGGATAGCAATTGGACA
CCTTTAGCACCAACTTCAAAACCCTTTAGACAGGAGATAGCTCTGACGTGTGAA
TCAACATGACCTTTCAATTGGCTACAGATACGGGGCAAAAATTGATGTGGAATG
TTGAAAACGATGATGTGACATCCTTGACTGAATCAATCAAGTCTGGATTAGCAA
CCAAATTGTCGGGTAGAGTGATGCCAGGCAAGTATTTACGTTTTGATGTCTAG
TATTTATGATTTCAAGTCAATTTTTACACCATTGATCTCTTCTTCGAACACCCACATT
TGTACTATTGGAGCGAAAACCTTCTGGGTATCCCTTACAATTTTCGGCAACCACCT
TGGCAATAGTAGTACCCAGTTACCAGATCCAATCACAGTAACCTTGAAAGGCT
TTTCGGCAGCCTTCAAAGAAACAGAAGAGGAACTTCTCTTTCTACCAGCATTCAA
GTGGCCGGAAGTTAAGTTTAATCTATCAGCAGCAGCAGCCATGGAATTGTCCTC
CTTACTAGTCATGGTCTGTTTCCTGTGTGAAATTGTTATCCGCTCACAATTCCAC
ACATTATACGAGCCGGATGATTAATTGTCAACAGCTCATTTCAGAATATTTGCCA
GAACCGTTATGATGTGCGCGCAAAAAACATTATCCAGAACGGGAGTGCGCCTTG
AGCGACACGAATTATGCAGTGATTTACGACCTGCACAGCCATACCACAGCTTCC
GATGGCTGCCTGACGCCAGAAGCATTGGTGCACGCTAGCCAGTACATTTAAATG
GTACCCTCTAGTCAAGGCCTTAAGTGAGTCGTATTACGGACTGGCCGTCGTTTT
ACAACGTCGTGACTGGGAAAACCCTGGCGTTACCCAACCTTAATCGCCTTGACGC
ACATCCCCCTTTGCGCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCC
CTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGCCTGATGCGGTATTTTC
TCCTTACGCATCTGTGCGGTATTTACACCCGCATATGGTGCACTCTCAGTACAAT
CTGCTCTGATGCCGCATAGTTAAGCCAGCCCCGACACCCGCCAACACCCGCTG
ACGAGCT

FIG. 7



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